VARIATIONS IN TYPHOID FEVER,

With Illustrative Charts.

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VARIATIONS IN TYPHOID FEVER, WITH ILLUSTRATIVE CHARTS.[1]

BY SAMUEL A. FISK, A.M., M.D., DENVER, COL.

GENTLEMEN: For the last ten lectures we have gone over together the subject of Typhoid Fever, and in addition you have followed me to the bedside where we have seen cases of typhoid clinically.

I offer no excuse for devoting this length of time to a subject of very considerable interest, and to a disease which you will be called upon frequently to treat; and I can only trust that, in the time that I have given to it, you have the most important features of the disease impressed upon your minds, so that in your practice in the future, you will make a diagnosis readily, and know what to do in treatment.

This morning I want to call your attention to some of the unusual forms touched upon in my previous lectures. I have spoken of the four pronounced symptoms: of the "pea-soup" stool, the temperature, the rose-spots and the enlarged spleen. With reference to the latter — the enlarged spleen — I have called your attention, at the bedside, in several cases, to the difficulty there is in outlining the size of the spleen because of the distention of the abdomen — the meteorism and tympanites. My own experience, as I have told you before, leads me to place much less emphasis upon this factor in the diagnosis of the disease than some authorities put upon it. With reference to the difficulty of outlining the size of the spleen, I wish to add to my own statement the authority of Strümpell, who says: "The enlargement of the spleen can often be demonstrated as early as the end of the first week, and is

[1] A lecture delivered to the Senior Class of the Medical Department of the University of Denver, October 17, 1892.

therefore of considerable diagnostic importance; but percussion of the spleen is sometimes decidedly difficult and deceptive in this disease, because of the tympanites. The surest demonstration of splenic enlargement is always by means of palpation, which, after a little practice, gives a positive result in a majority of cases." This enlargement does not occur until the end of the first week, and it is then difficult to outline because of the tympanites. If there is much abdominal distention — as is apt to occur in typhoid — palpation is difficult; and so I am inclined to say that this symptom of enlargement of the spleen is not of so great importance in making a diagnosis. It is not peculiar to typhoid. It occurs in other acute infectious diseases. The existence of rose-spots I have been led to regard with more importance; but here again one should be careful in eliminating other eruptions and not mistake simple erythemata for rose-spots. I have rarely seen a case of typhoid fever where I have not found the rose-spots in greater or less number. The "pea-soup" or, as it used to be called, the clay-colored stool, is of assistance; but I presume no one symptom has aided so much in diagnosis of typhoid fever as the temperature chart. Dr. Stedman, in the Third Series of the City Hospital Reports of Boston, published in 1882, in quite an elaborate discussion of the subject of typhoid fever, says: "The temperature of the body has come, since the general use of the clinical thermometer, to be the indication for treatment, diagnosis and prognosis." All the recent authorities place great emphasis upon this symptom of the disease. Strümpell says: "Observation of the temperature in typhoid is so absolutely essential for estimation of each individual case that no scientific physician ought to treat a case without regular measurement of the temperature"; and with other authorities he speaks of the stages of the disease, based very largely upon observations of temperature, namely, the stage of *Invasion* during the

first five or six days; the stage of *Development*, in which the evening temperature rises a little higher than the morning, step-like, until about the end of the first week, when it reaches a height of 104° or 105°; the *Fastigium*, extending over a period of about two weeks; and then the stage of *Defervescence* or *Decline*.

Out of this division of the several stages of typhoid fever has grown the popular idea that it must necessarily, in each individual case, run this well-defined course; and the further popular idea — which I have spoken to you of as fallacious — that at the end of twenty-one days, a *crisis* is reached, at which time the patient either improves or gets worse. In my own experience this does not hold true.

With reference to the stage of development, it is seldom that we get a case of typhoid so as to observe that stage carefully. You will find by looking over most temperature charts of typhoid fever that they are apt to start in at about the highest point. Sometimes we do get these cases early in the disease; but I think it is but rarely that you will see a case through the whole stage of development — through the whole of the first week.

The chart that I wish now to show you (Chart I), I have selected because it seems to me fairly typical of a normal case of typhoid fever. It was one of three cases [2] occurring in the same house at the same time. As marked here, it is the illness from the time that the man went to bed. This case I really did see in the stage of development — not all through, because I thought at the outset that it was one of those not unusual cases of abortive typhoid fever, where the temperature subsides in a few days to normal, and where the man recovers from what apparently was but a simple case of so-called biliousness. Later on, he went to bed, and I was called to see him. The disease ran its course of four weeks. Here you will see (indicating) three and a half weeks until it returned to the normal tem-

[2] Charts i, vii and xi.

perature, and without any complication. It was as nearly a typical case of typhoid fever as you will see.

There are all kinds of variations from the normal.

I present to you a case of peculiar interest (Chart II), where, instead of running a course of three or four weeks it extended over nine, ten, fifteen weeks, or one hundred and five days, rather knocking out the theory of "running a typical course of typhoid fever." The man had what might be called two distinct relapses. There is very marked in this chart (pointing) something I wish to call your attention to, namely, sub-normal temperatures in the stage of convalescence. I do not recall having seen it mentioned in the books, but in this chart the temperature ran down to about 95.5° sub-normal; it stayed sub-normal for ten days, and then in the second period it became sub-normal again. I show you this chart in contrast to the first, to demonstrate the fact that typhoid fever may run even one hundred and five days.

There is a type of typhoid often spoken of as typho-malarial. It is not so common with us in this Western country, more frequently occurring back in malarial regions. In these cases the extremes of temperature are very marked, showing great depression in the morning and great elevation in the evening. I have a chart of this nature (Chart III), — a patient at the County Hospital who at some previous time had had intermittent fever. By looking at this you will find that on one day there is a difference of temperature of one, two, four, six, seven, almost eight degrees; that with a temperature in the morning of 96.5° the previous evening it was 104.2°, — or a more correct way of stating it would be the reverse, the evening temperature 104.2° and the morning 96.5°. The alarming fall of temperature might suggest something serious in the disease, perhaps hæmorrhage or perforation of the bowel, with peritonitis. This, however, is a marked case of the malarial type.

One of the complications — perhaps I should correctly say, one of the grave symptoms — of typhoid, is marked nervousness, taken with a mild form of *subsultus tendinum* — that picking at the bed-clothes that is called *carphologia.* With this is associated more or less delirium at night, perhaps requiring that the patient should be very closely watched to prevent his getting out of bed; in some cases they run away. I have a chart representing that form of typhoid, with *subsultus tendinum.* This nervousness may begin in a pronounced form and go on to absolute stupor, or what is known as *coma-vigil,* in which the patient is absolutely unconscious. There may be great twitching as in the case of Dr. K——, which I have been reporting to you from time to time; working of the lips, tonicity of the muscles, and what is of very great importance in this disease, especially when accompanied with a high pulse, as it is apt to be, flickering of the pulse and high temperature. Chart IV is of this character — Dr. K——'s own case. You will see that the pulse ran up to 140 and the temperature to 104.5°. For two weeks he was unconscious. The case was marked by extreme nervousness, delirium, jerking of the hands and arms, great tonicity of the muscles and *coma-vigil;* he even passed his stools and urine involuntarily in the bed.

A more marked case, possibly, of typhoid with great nervousness, is a patient at the County Hospital, a young Dane, twenty years old, who for more than two weeks was lying in an absolute stupor in the ice cage. His stupor — his *coma-vigil* — was much more marked than that of the previous case; the stools were more frequent, and they were passed involuntarily, and also his urine. (Chart V.)

You will see that despite his stupor there was a very gradual decline. The stupor extended over something like three weeks. The indication for treatment in such cases, as I have pointed out to you before, is

stimulation. Each of these patients got an ounce of whiskey every hour. If they could not retain it by the mouth, it was given by enema. Heart stimulants were administered freely, and strychnia was given hypodermatically. The temperature was kept down, in the one case, by the ice cage; in the other case by constant sponging.

One of the most distressing complications of typhoid, is hæmorrhage of the bowels. This is most apt to occur in the earlier part of the third week, when the slough from the ulcers is given off. It is attended with collapse, rigor, it may be with cold sweats. The pulse usually runs up rapidly, very high, then it grows more feeble; and if the patient dies, it fades out. I have in my hands a chart illustrative of typhoid with hæmorrhages, — a young Swede who was of a hæmorrhagic tendency.

This case was complicated by frequent nose-bleeds. I seldom visited him but I found his handkerchief stained with blood. He had a relapse one day; his pulse went up to 160. The hæmorrhage was followed by a second and third; and in a short time he died. (Chart VI.)

I have another chart in which the hæmorrhage occurred much earlier in the disease. (Chart VII.)

This chart was from one of the three cases which I spoke of as occurring in the same house, — the case of a young woman, who had marked dilatation of the heart, with mitral insufficiency. The case was extreme, and from the start was marked with great nervousness, complicated by enfeebled heart-action, and terminated fatally at about the end of the second week, with hæmorrhages.

Peritonitis or perforation of the bowel is another complication of grave significance, by most authorities regarded as more grave than a hæmorrhage of the bowel. Unfortunately, I have no chart of this condi-

tion to show you. I can only cite the history of a case that I had under my observation some four years ago of a woman who, in the course of typhoid fever, in the third week, as I recollect, had three distinct rigors, of great intensity, with collapse followed by undoubted peritonitis. An extreme case, but finally recovering.

I have seen but a few cases of perforation.

I wish now to touch upon some of the milder forms of typhoid.

You have all heard of the so-called "walking-typhoid," in which the patient, though quite ill, cannot be persuaded to go to bed. He walks into the physician's office and a temperature of 103° or 104° is found. These cases cause so little discomfort that the patient does not go to bed until obliged to by a physician. It is not until quite late that there may occur a sudden change for the worse, or that some severe complication may set in.

This form of typhoid has been recognized for some time; but it is not of this that I wish to speak especially, but of the *Abortive Typhoid*, and of the *Typhus-levis*. For many years it was a question of grave dispute whether typhoid could be aborted; and it was claimed that it had to run a well-defined course, just as it was presumed that acute inflammatory rheumatism should run its course.

More recently, however, it has been acknowledged that there is such a thing as abortive typhoid fever, and you will find in Strümpell a recognition of this fact. "The name," he says, "belongs to cases which begin with severe symptoms and high fever, as if they were going to be grave, but in which these violent symptoms disappear *after a few days* and give place to a rapid convalescence."

Notice the difference between this description and that of Niemeyer (edition of 1878): "There are many

cases," he writes, "which are not characterized by any remarkable lack of intensity of the symptoms, or by any peculiarities during the first week; but in the second week the symptoms do not grow worse and prove dangerous as in "normal" typhoid, but they decrease, and toward the end of the second or third week have all disappeared.

"Lebert has proposed the name 'abortive typhoid' for these cases; and it seems preferable to other names, such as 'febricula,' 'febris typhoides,' etc., because it better expresses the fact that these cases are only modified, benign, brief forms of typhoid and not a peculiar variety of the disease. . . . We shall only remark that many of the cases which former writers call 'gastric fever' or 'mucous fever' are to be regarded as abortive typhoid."

Osler's description reads: "In the abortive form the symptoms of onset may be marked with shivering and fever of 103° or even higher. The date of onset is often definite, a point upon which Jürgensen lays great stress. Rose-spots may occur from the second to the fifth day. Early in the second week, or at the end of the first week, the fever falls, often with profuse sweating, and convalescence is established. In this abortive form relapses may occur, and may occasionally prove severe. When typhoid fever prevails extensively these cases are not uncommon. I agree with J. C. Wilson, who states that they are not nearly so common in this country as in Europe."

Fagge says: "Not a few cases of enteric fever attended with well-marked symptoms subside before the end of the third week; about some of them which run on for sixteen or eighteen days, very little need be said. Cases which terminate before the sixteenth day, however, require special study, because their real nature being overlooked, they are very apt to be set down as examples of a simple febricula, or of a non-specific, gastric, or intestinal catarrh."

I have had a good many cases of abortive typhoid fever; and in this connection I would wish to state that they had the symptoms of typhoid, — the general indisposition, sleeplessness, pain in the head, pain in the back, furred tongue, nausea and tendency to vomit, loss of appetite, tympanites, tenderness and gurgling in the right iliac fossa, and rose-spots. Some of them had diarrhœa, and others were attended with constipation; moreover, many of them occurred in the fall of 1890, when, as you know, we were having an epidemic of typhoid in Denver,[3] and illustrate the point made by Strümpell with reference to the diagnosis of typhoid fever, that "Ætiological factors, such as the occurrence of undoubted cases of typhoid in the neigh-

[3] Professor McLauthlin, health officer at that time, in an article read before the local medical society, said:

The disease has been decidedly on the increase in Denver during the past few years. In September and October, 1887, there were 45 deaths from typhoid, being 17.6% of the total deaths. In September and October, 1888, there were 55 deaths from typhoid, being 18.7% of the total deaths. In September and October, 1889, there were 106 deaths from this disease, being 29% of the total deaths, a surprisingly heavy rate. To further satisfy ourselves of this, we have but to compare Denver's mortality from typhoid with that of other cities in the country during the same period, namely, September and October, 1889:

Cities.	*Population.*	*Per cent. of Typhoids to total Deaths.*
New York	1,565,000	2
Brooklyn	843,000	2
Baltimore	500,000	3.5
St. Louis	450,000	3.4
New Orleans	254,000	4
Pittsburgh	230,000	9.2
Minneapolis	200,000	8.7
Denver	125,000	29.1

I am glad to state that, with an increased population (probably 150,000), the mortality from typhoid has fallen off to 15 deaths in September, 17 in October, 9 in November, and 7 in December, 1891, and only 8 for September, 1892.

The following extract from one of our dailies tells the story:

"The health statistics given in the *Times* do not begin to tell the story of the wonderful decrease in the prevalence of typhoid. In October, 1891, there were between 600 and 700 cases with 72 deaths. This year, in the hospitals and elsewhere there were not over 72 cases, with 9 deaths. Five of the fatal cases were imported from mountain towns, the patients in a dying condition. Practically, typhoid comes very near to having been exterminated."

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borhood are of great diagnostic value in obscure cases." And also as stated by Osler that "When typhoid fever prevails extensively these cases are not uncommon."

This case illustrates the point very beautifully. (Chart VIII.)

I saw my patient quite early in the attack. It was a pure case of abortive typhoid fever where the temperature came down to normal within the first week — a case of undoubted typhoid, a case of undoubted abortive typhoid. The convalescence was complete. It was accompanied, as the other cases were, by the putting on of flesh, clearness of the complexion, the clear eye, the ravenous appetite, and other symptoms which are apt to accompany the convalescence of a typhoid fever patient. It was a pure case of abortive typhoid.

Another case, also a young woman, aborted at the end of nine or ten days; a case of undoubted typhoid, with all the symptoms that I have described; with the additional appearances that attend convalescence, even to the loss of the hair; she had a beautiful head of hair, which all came out. (Chart IX.)

From this abortive typhoid down to the *typhus levissimus* or very mild typhoid spoken of by Strümpell and emphasized by Griesinger, is but a slight step.

I present two cases of this type which occurred in the fall of 1890 when typhoid was prevalent in Denver. These cases were marked by the symptoms of typhoid but ran a mild and short course.

Here is the chart of a young woman who had well-marked symptoms. (Chart X.)

What characterized her fever was that it was not extended. It is a good illustration of *typhus levissimus.*

The next case is still more marked. It is one of the three cases that I have mentioned as occurring in the same house. Not only was there, in this case, the

feature of typhoid in the neighborhood, but marked typhoid in the house. The disease ran a course of four weeks; mild in character; with all the characteristic symptoms. It was furthermore a second attack, the man having had typhoid once, and I may also state that Chart IV was also a case of second attack.

This leads me from the *abortive* type and *typhus levissimus* still further to what has been of great interest to me the last few years — the *afebrile* typhoid.

It used to be regarded as a fact that typhoid must necessarily be accompanied by an elevation of the temperature; and you will find that the third edition of Flint contains this statement: "More or less increase of the heat of the body is the rule. The rule that at some period in the disease the temperature is raised, is without any exception." Within the last few years I have been so apt to see cases that I have regarded as typhoid, in which there was no elevation of temperature, that I have been led to give the subject a good deal of investigation, and it has interested me exceedingly.

I have seen a number of cases of undoubted afebrile typhoid. I have some cases under observation to-day. One is a prominent business man, who, about the beginning of September, went into the mountains on business and for pleasure, where he subjected himself to considerable hardship, riding horseback, fishing, wading the streams, sleeping out nights, and taking long journeys. He came back complaining of loss of appetite, of feeling tired, and of a lack of energy. He then went off on another trip to the south-western portion of the State, and while out driving in Ouray, one afternoon, was attacked with a severe chill, and hurried to Denver the following morning. He complained that in addition to the symptoms that I have mentioned — loss of energy, loss of appetite, feeling tired — he had been sleepless. One thing that he noticed particularly was that for a week or so he had not been able

to sleep; that he also had persistent pain in the small of his back, which he could not get rid of. His eyes were heavy and lusterless, his tongue furred. He had some diarrhœa. He had been blowing some clots of blood out of his nostrils. There was a little tenderness in the right iliac fossa. His temperature has never, so far as I know, been above the normal; and his pulse has been very much sub-normal, going down as low as 42, 48 and 52 beats per minute. He has had rose-spots, successive crops, and his spleen is enlarged.

I have under observation another case of a young girl, twenty-two years of age, of this afebrile typhoid, in whom there have been similar symptoms, except that the diarrhœa has been more marked.

I can recall a number of instances of this afebrile type taking four or five weeks to run its course, and I have even seen mild hæmorrhage from the bowel; and in this last case, the hæmorrhagic case, there were rose-spots, enlargement of the spleen, and the sub-normal pulse, running way down.

That such a thing as afebrile typhoid exists has been called to the attention of the profession by Liebermeister in "Ziemssen's Cyclopœdia," and is quoted in "Pepper's System of Medicine," Vol. 1, p. 299. He says: "Many of them never show during their entire course any rise of temperature, or occasionally a slight elevation only; but an enlargement of the spleen could generally be detected, and occasionally an unmistakable rose-colored eruption. The action of the bowels was usually irregular; sometimes there was diarrhœa; sometimes, on the other hand, obstinate constipation. The other symptoms were prostration, pains throughout the body, often headache, persistent loss of appetite, with more or less swollen and furred tongue and markedly diminished frequency of the pulse which disappeared with convalescence, while its quality was not appreciably altered. The long duration of an apparently trifling indisposition he considers as especially characteristic."

Strube writes of an outbreak during the seige of Paris in 1870, "In many of the cases the temperature was sub-normal" — a condition that prevailed in the case I have spoken of as having afebrile typhoid with slight hæmorrhages from the bowel.

Osler also speaks of afebrile typhoid. On page 15 of his work you will find: "There are cases described in which the chief features of the disease have been present without the existence of fever. They are extremely rare in this country. No instance of the kind has come under my observation."

I must hasten to finish what further I have to say and that is with reference to Strümpell's statement, that "A certain immunity has been alleged to be given by many circumstances, especially pregnancy, the puerperal state, and other diseases already existing, (tuberculosis and heart disease). It does seem to be certain that the occurrence of typhoid fever gives very probable though not absolute immunity against any later new attack."

Now, with reference to that immunity afforded by a previous attack, I have presented two charts which show you that such is not the case. One, of the mild type, ran its course of four weeks (Chart XI); the one of Dr. K., that ran a severe course (Chart IV); Dr. K.'s second attack occurring within two years of the first.

With reference to the immunity offered by pregnancy that also is a mistake which is now generally recognized. Cazeaux says: "Typhoid fever may occur at any stage of pregnancy. It often causes abortion which may take place in the first or second week of the disease."

Lusk says: "Typhoid is frequently, and relapsing fever almost constantly, accompanied by abortion, or by premature delivery induced by profuse uterine hæmorrhages, and thus greatly endangers life."

Reynolds says of typhoid fever: "When this disease occurs during pregnancy, it is followed by miscarriage in all but the most extremely mild cases, and even in those the life of the child is rarely preserved."

I have had the opportunity of seeing three cases of pregnancy complicated with typhoid fever. I will show you a chart of one of them (Chart XII).

This was a case where the pregnancy was established about six or seven months, and where she carried the child through the fever. A well-marked case of typhoid, and no doubt of the pregnancy. She recovered from the typhoid and I lost track of her. I never heard of any untoward occurrence.

A few years ago I saw a case of pregnancy with typhoid, in consultation with Dr. P., that resulted in a miscarriage, but the patient herself recovered.

The third case I had under my care at the County Hospital, last year. She was a foreigner, was probably a couple of months along in pregnancy. She developed albuminuria, and died of uræmic poisoning.

With reference to typhoid with heart disease, Chart No. VIII (hæmorrhage and heart disease) shows that they are not inconsistent; and I have a well-marked chart of the same, where the typhoid was complicated with heart disease (Chart XIII).

The chart itself looks like one of typho-malaria, but it is not so; the extremes of temperature were largely due to nervousness.

With reference to the incompatability of typhoid and tuberculosis, I unfortunately cannot furnish any charts, but my experience is positively on the side that tubercular trouble does not furnish immunity. I have, within the last week, run across two cases of tubercular trouble that I brought through typhoid two years ago, and I have many such in mind. In fact, I have one well-marked case, just beginning, under my observation at the Methodist Hospital at the present time.

I wish now to call your attention to the frequency with which the temperature runs *sub-normal* during the stage of convalescence.

This point is beautifully illustrated in Chart No. II and is well shown in Chart XIV.

In each case, as you will see, the temperature ran down to 95.5°, and continued sub-normal for a week or ten days. This stage calls for stimulation, and requires care that undue strain should not be put upon the heart. It is usually accompanied by profuse sweating and occasionally we see *sudamina.*

This sub-normal temperature is something that I have seen but sparingly mentioned in books, except in Flint, where he says, "At certain periods the heat may not exceed, and it may often fall below, the standard of health." This is an observation in the third edition of Flint, published in 1868. I have not noticed any mention of it in any other authority; but I have probably overlooked the point; at any rate, it has frequently occurred in my experience.

And now I wish to show you Chart XV, as illustrative of the fact mentioned by Osler that acute tuberculosis is not infrequently mistaken for typhoid fever.

You will observe the daily changes of temperature, but you will also notice how evenly these changes run.

In conclusion, Gentlemen, I do not feel that I need make any apology for dwelling at such length on the subject of typhoid fever, nor in offering the remarks I make to-day. I feel that I have been able to present you a series of charts of unusual interest, and I trust that their characteristics will be fixed upon your minds and be of service to you in your work in the future. I wish especially to emphasize the points that typhoid does abort, and that it may also be present and the clinical thermometer show that the patient's temperature is normal or even sub-normal.

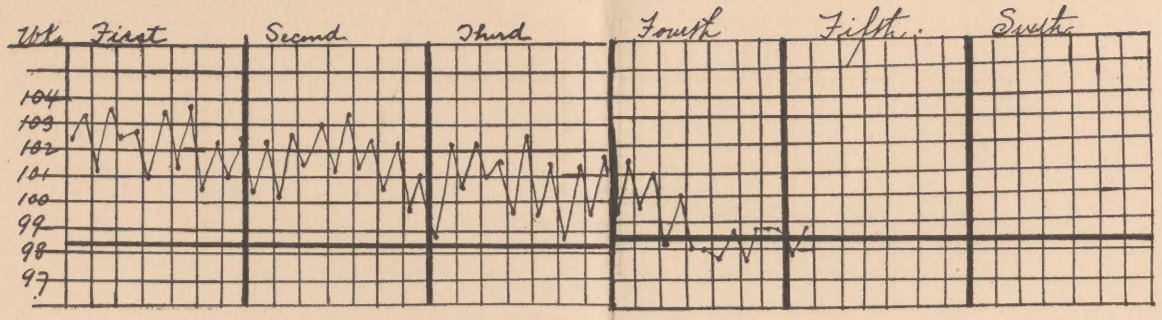
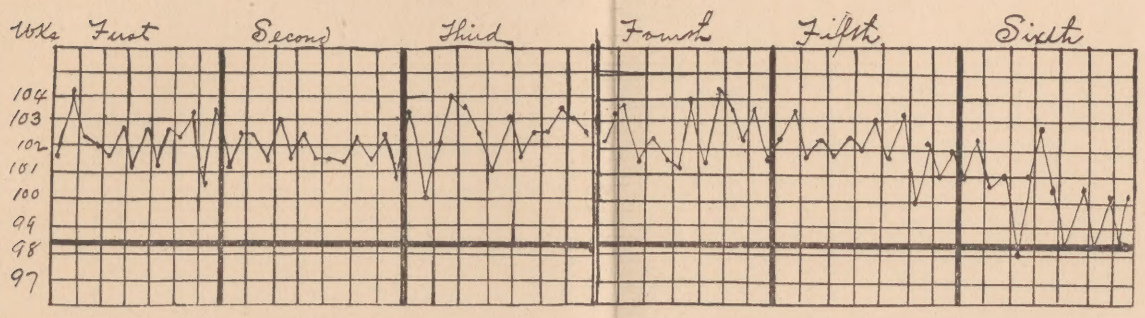
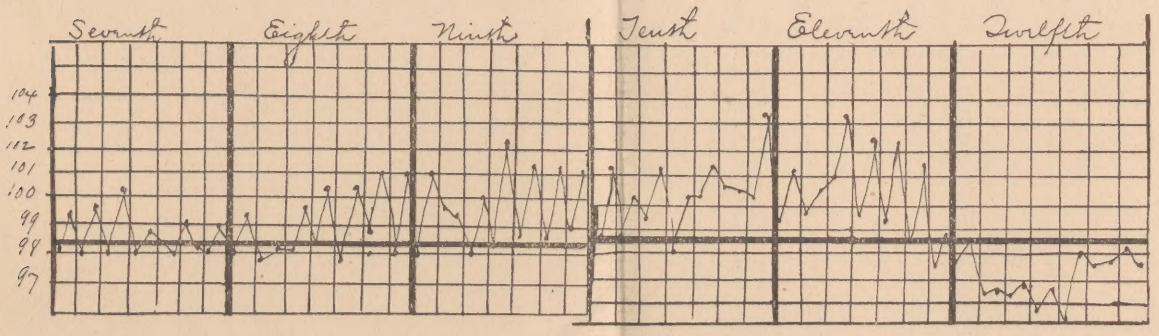


CHART I. Normal Typhoid.





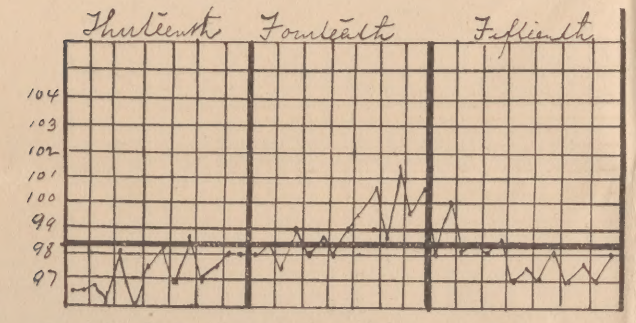


CHART II. Prolonged with Relapse and Sub-normal Temperature.

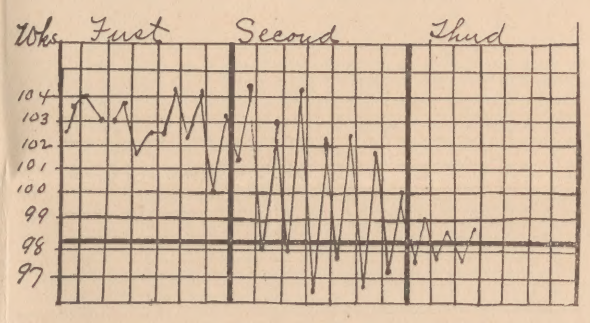


CHART III. Typho-Malaria.

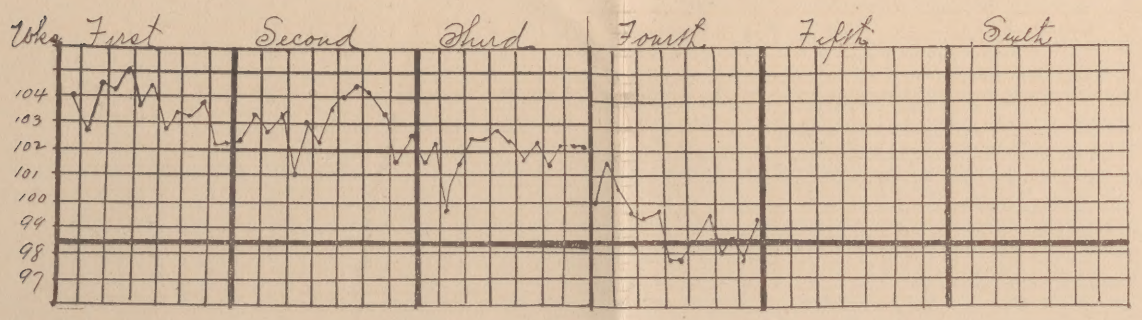


CHART IV. Typhoid with marked Nervousness.

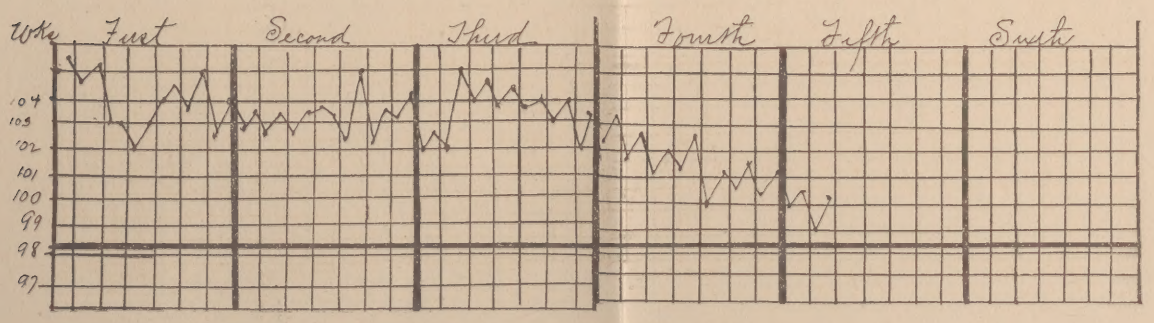


CHART V. Typhoid with Coma-Vigil.

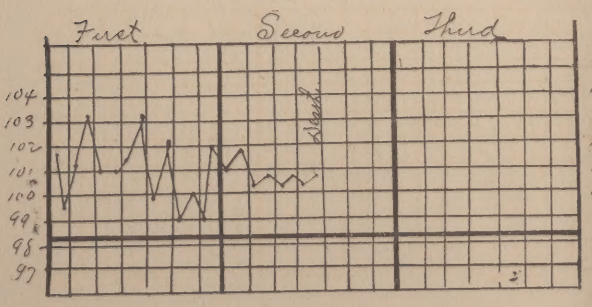


CHART VI. Typhoid with Hæmorrhages.

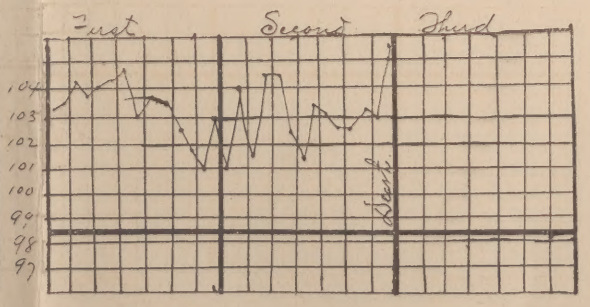


CHART VII. Typhoid with Heart Disease, Hæmorrhages, Death.

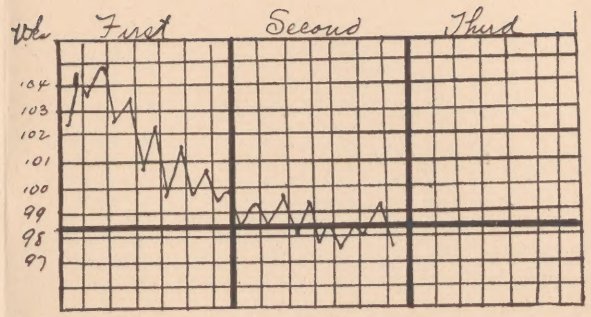


CHART VIII. Abortive Typhoid.

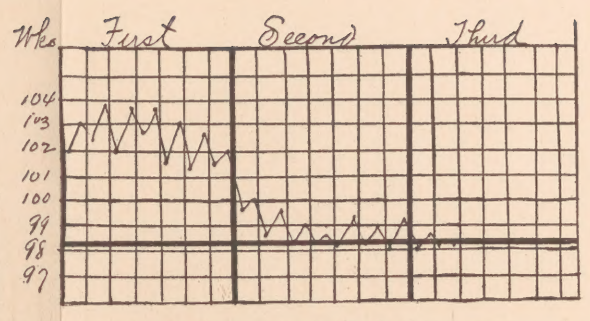


CHART IX. Abortive Typhoid.

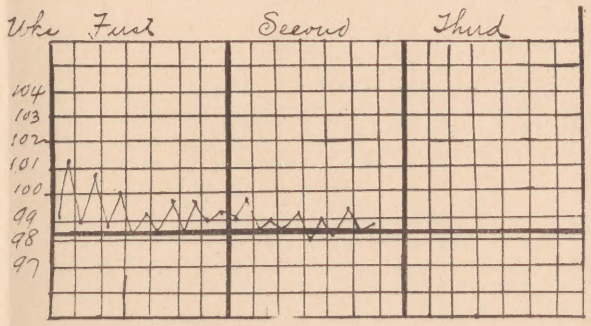


CHART X. Typhus Levissimus.

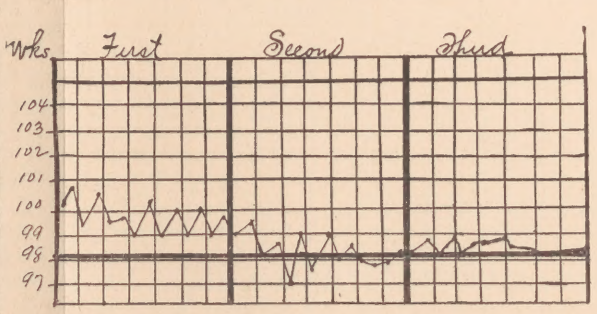


CHART XI. Typhus Levissimus.

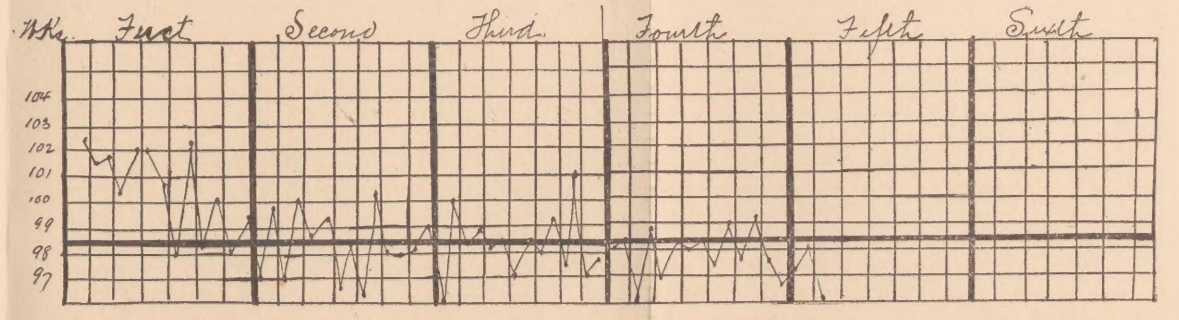


CHART XII. Typhoid and Pregnancy.

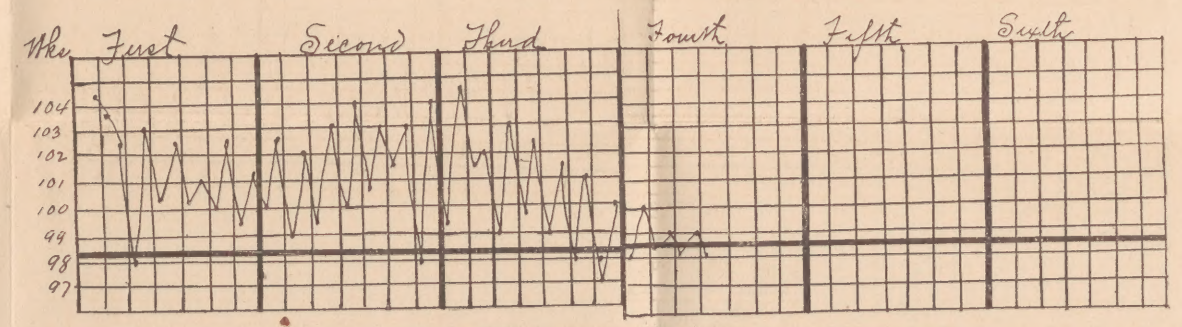


CHART XIII. Typhoid and Heart-Disease.

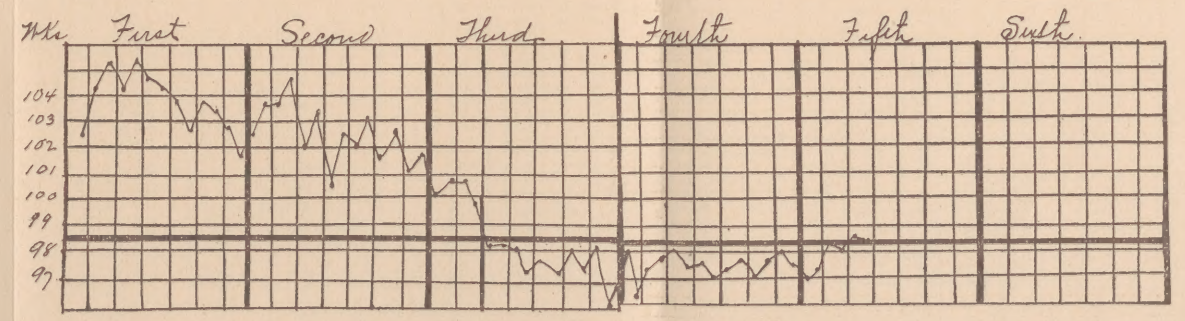


CHART XIV. Typhoid with Sub-normal Temperature.

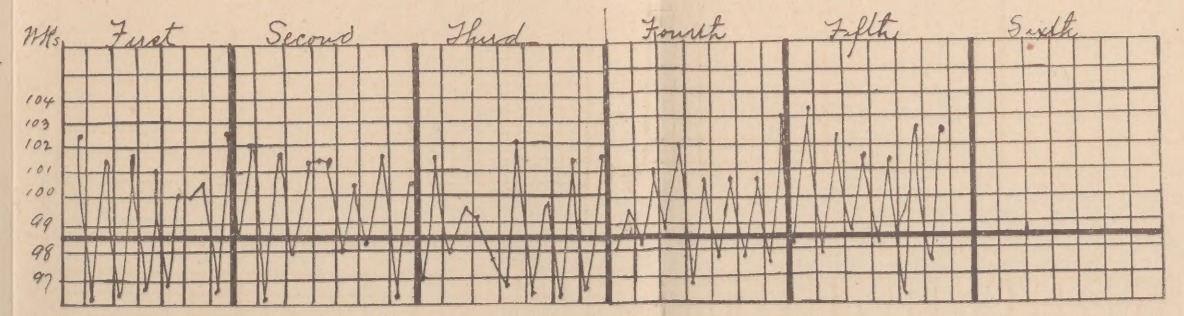


CHART XV. Tuberculosis.